Subpoena requested: LEA-24
John Waters

UNITED STATES NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
PHILADELPHIA ELECTRIC COMPANY	)	Docket No. 50-352
(Limerick Generating Station,	)	50-353
Units 1 and 2)	)	

November 2, 1984

Request of Limerick Ecology Action for issuance of a subpoena to obtain the testimony of Mr. John Waters, Fire Marshall and Municipal Emergency Coordinator for Upper Merion Township on off-site emergency planning contentions on the issue of traffic congestion in in the vicinity of Valley Forge National Park, King of Prussia area (Contention LEA-24/FOE-1)

Pursuant to 10 CFR §2.720, Limerick Ecology Action hereby requests the Atomic Safety and Licensing Board in the above captioned proceeding to issue a subpoena to:

Mr. John Waters
175 West Valley Forge Road
King of Prussia, Pa. 19406

(215-265-2600)

requesting Mr. Waters to appear at the United States Customs Court House, Second and Chestnut Streets (Room 300) in Philadelphia, Pennsylvania on November 27th., 1984 at 9:00 a.m. and to be on 24 hour phone alert standby every day thereafter until called to testify on behalf of Limerick Ecology Action and Friends of the Earth on the subject matter of contention LEA-24/FOE-1, which states:

"There is no assurance that plans for evacuation of the 10 mile radius (EPZ) will not be impeded by traffic congestion in the vicinity of Marsh Creek State Park, Exton area (involving Route 100) and Valley Forge Park, King of Prussia area. These areas should either be included in the Emergency Planning Zone or adequate plans for traffic control and direction should be made to avoid adverse effects on EPZ evacuation."

LEA OFFERING OF PROOF

Mr. Waters is the Fire Marshall and Emergency Coordinator for Upper Merion Township. Robert Anthony of Friends of the Earth has discussed this matter with him, and has informed LEA that Mr. Waters has participated in state emergency planning meetings on Limerick. According to Mr. Anthony, Mr. Waters stated that although no consideration has been given to evacuation plans for Upper Merion Twp., he believes that residents will spontaneously evacuate in the event of a radiological emergency at Limerick. Additional concerns have been raised about the fact that there will be supplemental buses and ambulances coming into the township

in the vicinity of the King of Prussia Mall, which is a transportation and central resource staging area for the Montgomery County EPZ.

Mr. Waters has knowledge of traffic conditions in Upper Merion Township, particularly as would effect emergency operations and evacuation by the EPZ population passing through Upper Merion Township. His judgement and experience will influence any action planned or taken by Upper Merion Township in response to traffic congestion resulting from spontaneous evacuation, and as a result will to a large extent determine the workability of proposed EPZ evacuation routes passing through the township. The specific roads in question are Route 363 (especially in the vicinity of the Betzwood Bridge), Routes 202, 76 (Pa. Turnpike), and 276 (Schuylkill Expressway).

In addition, Upper Merion Township has commissioned a "Township-wide Traffic Study" to be prepared by the Simpson Division of Booz-Allen & Hamilton, Inc. The Phase 1-Township Overview, Interim Report has been provided as an LEA Exhibit included in this filing with materials relating to contention LEA-24. LEA provided the parties with supplemental discovery information relating to the Upper Merion Study with its Sept. 6, 1984 filing that contained the respecification of admitted emergency planning contentions. Mr. Anthony obtained a copy of the report on Nov. 2, 1984. On page 1 the report states that the Pennsylvania Turnpike, the Schuylkill Expressway and Route 202 all experience greater than capacity volumes on their segments through the Township. The Interim Report goes on to systematically identify and pricritize traffic problems through the Township, and to recommend transportation improvements based on thorough analysis of top-ranking problem areas. Page 2 states that ...."Upper Merion's arterial and collector streets also experience traffic problems: traffic on some of these roads has more than doubled in the past 10 years, and many intersections operate at levels far beyond efficient capacity."

Mr. Anthony has contacted Mr. Waters to try to obtain information and testimony from him regarding this matter. Mr. Anthony prepared a list of questions to be used for the preparation of testimony for this proceeding. Mr. Waters has informed Mr. Anthony that he has answered the questions as requested, but has been advised by the Upper Merion Township Solicitor not to release the information unless a subpoena is issued by the Atomic Safety and Licensing Board requesting his testimony. Therefore, LEA hereby requests that a subpoena be approved by this Board and issued to Mr. Waters for the purposes of obtaining his testimony on contention LEA-24/FOE-1. LEA is willing to provide any additional information that the Board may desire in regard to this request if necessary to obtain the subpoena.

Sincerely,

Phyllis Zitzer

Phyllis Zitzer, LEA President

cc: Service List
Subpoena forms sent only to Board

exhibit

UPPER MERION TOWNSHIP
TOWNSHIP-WIDE TRAFFIC STUDY

PHASE 1 - TOWNSHIP OVERVIEW
INTERIM REPORT

prepared by

Simpson & Curtin Division
BOOZ · ALLEN & HAMILTON INC.

JULY 6, 1984

TABLE OF CONTENTS

LIST OF EXHIBITS

1. INTRODUCTION

This interim report is aimed at identifying and prioritizing traffic problem sites in Upper Merion Township. It contains the documentation of the Township overview tasks. Following a discussion of findings and recommendations with Township officials (and some possible adjustments to the list of problem sites for further analysis), the second phase of the study, the Traffic Improvement Program, will begin.

Unlike other recent traffic studies in Upper Merion Township, this study examines traffic conditions and needs for the Township as a whole, rather than for a small area around a specific proposed development. By taking this broad perspective, the Township can best guarantee that transportation improvements are coordinated, and that the greatest traffic problems achieve the highest priority.

The study comes at a time when pressures are high for transportation improvements. Accessibility - - the factor responsible for much of Upper Merion's tremendous growth - - is approaching the point where it is more a liability than an asset. For more than 20 years, the Pennsylvania Turnpike, the Schuylkill Expressway, and Route 202 made the Township an excellent location for commercial and retail development, and a convenient spot for residents. Today, all three of these highways experience greater than capacity volumes on their segments through the Township. Upper Merion's arterial and

collector streets also experience traffic problems: traffic on some of these roads has more than doubled in the past 10 years, and many intersections operate at levels far beyond efficient capacity. Moreover, accident rates on Township roads are up 20 percent since 1981.

The objectives of the study are to systematically identify and prioritize traffic problems throughout the Township, and to recommend transportation improvements based on thorough analyses of top-ranking problem areas. This interim report documents the study team's efforts regarding the identification and prioritization of problem areas. Following this introduction, the report is in sections as described below:

- Section 2, Data Collection, describes the data elements used in the review of Township traffic conditions;
- Section 3, Existing Conditions, defines the Township's current traffic volumes, accident statistics, and transit service;
- Section 4, Future Development, complements Section 3 by identifying pro- posed transportation improvements, and committed and potential Township developments; and
- Section 5, Problem Area Prioritization and Selection, presents an analysis of potential traffic problem areas, and our ranking of the areas according to selection criteria.

A listing of problems and deficiencies at specific, high ranking traffic problem locations is included in an appendix.

A presentation and review of these task efforts are initial steps of the phase two efforts. Input from the Township in the form of comments and the identification of any other

key problem areas is also being sought to complement the consultant work efforts. Where supplemental data collection efforts are necessary to better define or select problem areas, mechanisms for obtaining such data will be determined. As such, the next steps of the study will be to refine the problem area statements so that all key locations are included.

2. DATA COLLECTION

The major emphasis of this study is on the Phase 2 efforts, development of a Traffic Improvement Program. As such, the study team sought to maximize the use of previously collected, pertinent data during the initial phase. Reports and observations made in connection with the numerous private and public development projects facilitated this effort. The full range of data elements used in this portion of the study were obtained as follows:

- Average daily traffic data for most of the major roads through the Township were supplied by the Delaware Valley Regional Planning Commission (DVRPC). The Pennsylvania Department of Transportation (PaDOT) office at St. Davids, and the Upper Merion Township Traffic Safety Unit supplied supplemental traffic count data. Traffic volumes used were mostly from 1982 to 1984 counts. In a few cases, earlier counts were used, but with an adjustment to account for traffic growth.

- Peak hour turning movement counts were available for about 40 intersections in the Township. Traffic impact studies for proposed developments, and transportaton improvement reports were the main sources for this information. Data collected by Orth-Rodgers & Associates for the Schuylkill Expressway Reconstruction Project were also made available and used in this study. Township-initiated turning movement counts were also available for a few intersections. Data were only used from actual peak hour counts taken since 1981.

- Proposed private developments were identified from lists compiled by the Montgomery County Planning Commission and by Upper Merion. The current use of development sites was determined from site observations and from 1980 aerial photographs obtained from DVRPC. Traffic impact studies projecting traffic to and from the developments were available for some of the proposed developments. Rates from the Institute of Transportation Engineers Report " Trip Generation", 1982 edition were used to estimate future volumes where impact studies were unavailable.

- Traffic accident data on roads within the Township came from Upper Merion Police Department accident reports. The Township's Traffic Safety Unit provided detailed accident data covering the period January to May 1984. A total of 678 reported traffic accidents was considered.

- Projected transportation improvements came from DVRPC's Transportation Improvement Program for fiscal years 1984, as amended through October 27, 1983, and from various traffic impact studies where improvements at off-road sites were recommended. A list of proposed, temporary and permanent improvements in relation to the Schuylkill Expressway Reconstruction was also obtained from PaDOT.

- Public transit information for general and paratransit service through Upper Merion was supplied by the Montgomery County Planning Commission and by the Southeastern Pennsylvania Transportation Authority (SEPTA).

From this information, the study team was able to develop a fairly comprehensive understanding of Township traffic conditions, and of factors which could affect those conditions in the future.

3. EXISTING CONDITIONS

Upper Merion Township is well traversed by state highways which provide major access routes within one mile of all Township destinations. The Pennsylvania Turnpike and three major state highways - - the Schuylkill Expressway (I-76), Route 202, and the County Line Expressway - - serve local origins or destinations, but primarily carry interregional traffic passing through the Township.

About 25 other roads serve the Township as arterials or collectors with a wide range of traffic uses. The major roads through Upper Merion, including all state highways, are shown in Exhibit 1. Those roads on the Township system which serve as major arterials are also presented.

Traffic Volume and Congestion

As would be expected, traffic volumes on Township roads are largely a function of interregional traffic and local activity patterns. Following the two expressways, the Turnpike and Route 202, the six Township roads with the highest average daily traffic volumes are, in descending order:

. North Gulph Road	26,200
. South Gulph Road	20,500
. West Valley Forge Road	17,800
. South Henderson Road	16,200
. First Avenue	14,600
. Conrad Drive	14,300

The high count on North Gulph was made where the road abuts the Valley Forge Golf Course and puts the road segment in the same range as Route 202 in terms of number of vehicles carried. The high volume can be attributed to commercial activity at the King of Prussia Industrial Park, the malls, and at offices on the east side of North Gulph. These traffic generators are also major factors in the high volumes found at First Avenue, Conrad Drive, and other area roadways. Average daily, morning peak hour and evening peak hour traffic volumes for key Township roads are presented respectively in Exhibits 2, 3, and 4. For the two peak hour periods, the total volumes passing through various intersections are also depicted. This graphically shows the magnitude of traffic passing through each intersection.

The annualized rates of traffic growth experienced by Township roads at periods between 1972 and 1984 are shown in Exhibit 5. On this exhibit, it is significant to note that traffic volumes on all four of the major interregional highways grew during this period, and that at least 14 of Upper Merion's other major roads grew at annual rates higher than seven percent. This is a rate at which traffic volumes double every ten years. Roads which declined in traffic volume were mostly along the eastern edge of the Township by the Schuylkill River. The closing of the Allen Wood Steel Plant, and the general decline of other River area commercial and industrial activity is a probable cause.

As indicated, intersection approach volumes are also shown on the peak hour maps, Exhibits 3 and 4. From a traffic operations perspective, the traffic volume passing through an intersection is normally more critical than the volume at a midblock location. Traffic congestion is more likely experienced where traffic must stop for a signal or stop sign, than when it can otherwise flow freely in midblock. A road which narrows, such as at a bridge crossing, is a possible exception.

The degree of traffic congestion at an intersection can be ranked according to six levels of service, ranging from "A" - free-flowing traffic, to "F" - forced movement. The six levels, as they apply to a signalized intersection, are more fully defined in Exhibit 6. The generally accepted industry standard is that intersections experiencing Levels of Service A, B, and C during peak hours are acceptable, D is marginal, and E and F are unacceptable.

Several quantitative methods exist for objectively determining levels of service at signal-controlled and stop sign-controlled intersections. For this initial intersection screening a frequently used method involving the identification of an intersection's **"critical lane volumes"** (based on through traffic, turning movements, intersection configurations, and signal phasing) was used to estimate existing levels of service. This procedure is described in Transportation Research Board Circular 212, "Interim Materials on Highway Capacity".

The critical lane approach was used to calculate levels of service at those intersections where turning movement counts were available. These intersections are located along major Township roads and are, therefore, likely candidates to be

EXHIBIT 6

LEVELS OF SERVICE FOR SIGNALIZED INTERSECTIONS

- Level of Service A - Typically, the intersection approaches appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation, their only concern being the chance that the light will be red, or turn red, as they approach. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

- Level of Service B - An occasional approach phase is fully utilized and some are approaching full use.

  Level of Service C - Occasionally, drivers may have to wait through more than one red signal indication, and queues may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. This is the level of service typically associated with design practice, although many urban areas accept level of service D as a standard.

- Level of Service D - Delays to approaching vehicles may occur during short periods within the peak hour, but enough cycles with lower demand occur to permit periodic clearances of developing queues, thus preventing excessive backups.

- Level of Service E - Maximum capacity occurs at this level. It represents the largest number of vehicles that any particular intersection can accommodate. At capacity, there may be queues of vehicles waiting upstream of the intersection and delays may be great (up to several signal cycles).

- Level of Service F - This level represents jammed conditions. The intersection operates erratically under forced flow and maximum congestion exists.

experiencing unacceptable or marginal levels of service. Other intersections were also identified as possibly having poor levels of service, but the lack of turning movement counts precluded a quantitative analysis. From observations of peak hour conditions at these intersections, a very conservative estimation of levels of service was made; unless an intersection had clearly acceptable or clearly unacceptable conditions, it was considered to have a marginal level of service.

A summary map in Exhibit 7 shows the results of the level of service analysis for those intersections examined at either the morning or evening peak hour, whichever is worse. This shows the intersections as either acceptable (Level A, B, or C), marginal (Level D) or unacceptable (Level E or F).

The bulk of the Township's major congestion problems are along Route 202, North and South Gulph Roads, and at intersections by the King of Prussia Industrial Park. Other spots identified as having poor level of service conditions include:

- Goddard at Wills
- Wills at Allendale
- Keebler at Valley Forge
- Henderson at Church
- Church at Crooked
- King of Prussia at Croton
- South Warner at Croton
- Goddard at Court.

Congestion at these locations was determined from level of service analyses where data were available and from supplemental field observations.

these improvements are likely to have been planned several years ago and address a critical traffic needs. However, the availability of limited public funds restricts the number of projects which can be scheduled at any given time. The sizable allotment of funds to the Schuylkill Expressway reconstruction project over the next few years imposes another constraint on how many other projects can be publicly funded.

Major publicly funded transportation improvement projects programmed for the next four years as well as other improvements under review for private developer implementation are listed in Exhibit 12 and mapped in Exhibit 13. These latter improvements are those required of developers to insure adequate site access and traffic flow through adjacent intersections. These are a result of the Township's zoning and site plan approval processes, PaDOT's highway access and other reviews.

While developer contributions are negotiated on a site-by-site basis and are dependent upon a developer's construction schedule, the Township is moving towards formalizing a highway improvement fund. This would specify the developer's share of off-site improvement costs and more importantly provide a mechanism for Upper Merion to fund highway improvements.

5. PROBLEM AREA PRIORITIZATION AND SELECTION

Phase 2 of the Township-wide Traffic Study will involve the development of recommendations to improve conditions at specific traffic problem areas. To ensure that the most critical problem areas are addressed, a prioritization and selection process was developed. The process involves the selection of locations based on four differently weighted criteria, and the ranking of results to permit prioritization. The mechanisms of the process and the application to Upper Merion traffic locations are described below.

Prioritization and Selection Process

The primary tool used in this process is the Traffic Problem Identification Matrix. This matrix, presented in Exhibit 14, graphically portrays the relationship of the four criteria used in determining the traffic problem locations. These criteria, representing both existing and future traffic conditions are described below.

- Level of Service - Industry standards are the basis for evaluating traffic congestion conditions. Peak hour levels of service are rated as follows:

  - Acceptable - "A", "B", or "C"
  - Marginal - "D"
  - Unacceptable - "E" or "F"

The level of service receives the heaviest weighting of the four criteria. All traffic locations experiencing unacceptable levels of service are automatically prescribed for Phase 2 analysis. Most marginal level of service locations and some acceptable level of service locations are also to be analyzed in Phase 2, depending upon the presence of certain other traffic conditions.

Accident Frequency - Lack of adequate traffic data prevents the calculation of accident rates at many intersections in the Township. The designation of high, medium, and low accident locations is, therefore, made on the basis of accident frequency, or where available on accident rates, (i.e., accidents per million vehicle miles). Specifically, the designations are defined as follows:

- Low - less than five accidents between January and May 1984
- Medium - 5 to 7 accidents
- High - 8 or more accidents, or locations with more than three accidents per million vehicles

To match study aims, accidents are weighted slightly less than level of service in ranking traffic problem locations. However, similar conditions apply for determining whether a traffic location merits Phase 2 analysis. All locations with high levels of accidents are to be evaluated in Phase 2, as are some medium and low accident depending upon other traffic conditions.

Traffic Volumes - Traffic volumes, level of service and accidents are all performance measures which independently describe characteristics and operation of intersections. Values for designating traffic volumes into three categories were selected based on distributing the available data into three general categories. As such, they are not an indication of the intersection's ability to accommodate the traffic volumes. However,

they do indicate those locations where traffic improvements would affect large numbers of drivers. The three categories are defined below.

- Low - intersection peak hour traffic volumes of less than 1800 vehicles
- Medium - 1800 to 2800 vehicles
- High - More than 2800 vehicles

While high traffic volumes are not, in themselves, indications of traffic problems, they are useful in determining priority among two locations with relatively equal levels of service and numbers of accidents.

Projected Traffic Growth - Traffic locations experiencing marginal or even acceptable traffic conditions at present, may face deteriorating conditions in the future. This criterion reflects the changes in traffic volumes prompted by regional growth and by specific proposed developments. The actual anticipated traffic growth is not quantified. Rather, roads and intersections are assigned a relative growth factor depending upon the degree of interregional traffic handled, and on projected nearby development. The three growth designations are as follows:

- Low - average or no growth
- Medium - high growth
- High - very high growth

This criterion does not address proposed transportation improvements. Because of the focus on current transportation problems and the uncertainty of proposed developments, projected traffic growth is a low weighted factor.

Together, the four criteria permit a quantitative ranking of locations by overall traffic conditions. Moreover, they define the combinations of traffic conditions which warrant the Phase 2 analysis of traffic problem areas. On the matrix,

these conditions are designated by those boxes below and to the right of the diagonal line. Box 54, for example (representing marginal level of service, low accidents, medium volume, and high growth), would be subject to Phase 2 analysis. Box 63, with low volumes but otherwise similar conditions, would not be selected for Phase 2 analysis. The lower the box number, the higher the priority of traffic problem locations. The matrix is designed so that problem locations falling in boxes 1 to 60 are selected for Phase 2 analysis.

Upper Merion Traffic Problem Area Selection

A summary of traffic conditions at specific Township locations is presented tabularly in Exhibit 15 and graphically in Exhibit 16. As is evident from the two exhibits, the Township's unacceptable traffic conditions are along Route 202, North and South Gulph Roads, the industrial park and mall areas, and at certain intersections on Henderson, East Church and South Warner Road. A narrative description of problems at unacceptable locations is provided in Appendix A. This appendix also includes preliminary suggested improvements for these locations. More definitive improvement programs for the unacceptable locations will be developed in Phase 2.

EXHIBIT 14
TRAFFIC PROBLEM IDENTIFICATION MATRIX

ACCIDENTS	VOLUME GROWTH	LEVEL OF SERVICE: ACCEPTABLE – LOW	ACCEPTABLE – MEDIUM	ACCEPTABLE – HIGH	MARGINAL – LOW	MARGINAL – MEDIUM	MARGINAL – HIGH	UNACCEPTABLE – LOW	UNACCEPTABLE – MEDIUM	UNACCEPTABLE – HIGH
LOW	LOW	81	79	76	72	67	61	54	46	37
	MEDIUM	80	77	73	68	62	55	47	38	29
	HIGH	78	74	69	63	56	48	39	30	22
MEDIUM	LOW	75	70	64	57	49	40	31	23	16
	MEDIUM	71	65	58	50	41	32	24	17	11
	HIGH	66	59	51	42	33	25	18	12	7
HIGH	LOW	60	52	43	34	26	19	13	8	4
	MEDIUM	53	44	35	27	20	14	9	5	2
	HIGH	45	36	28	21	15	10	6	3	1

LEGEND

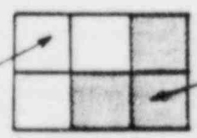


EXHIBIT 15
INTERSECTION CONDITIONS SUMMARY TABLE

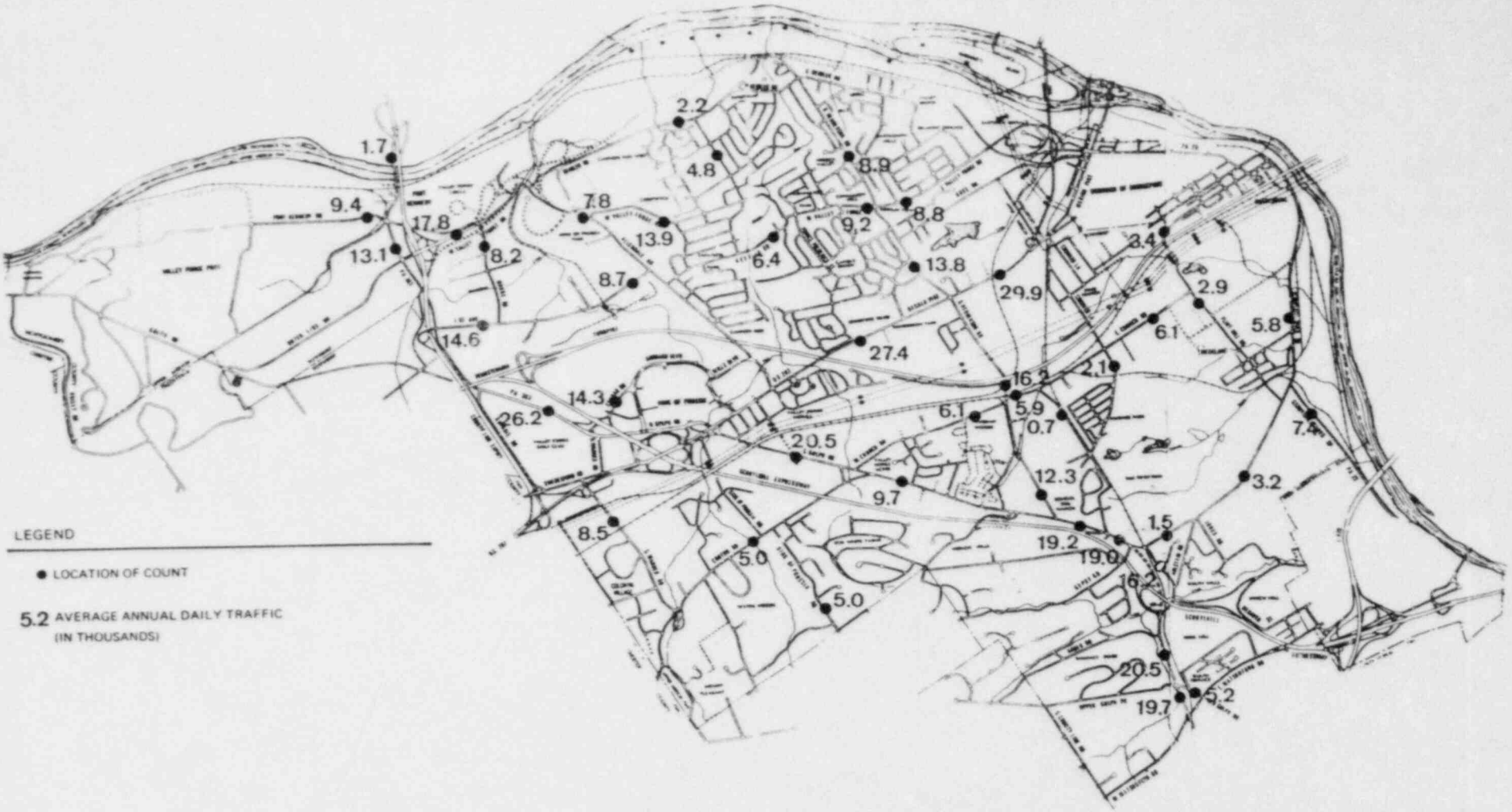
INTERSECTION	LEVEL OF SERVICE	5 MONTH ACCIDENTS HISTORY	PEAK HOUR VOLUME	PROJECTED GROWTH	TRAFFIC PROBLEM INDEX SCORE
	○ ACCEPTABLE ◒ MARGINAL ● UN-ACCEPTABLE	○ 0 - 4 ◒ 5 - 7 ● >8 OR MORE THAN 3 MILLION VEHS.	○ < 1800 ◒ 1800 - 2800 ● > 2800	○ AVERAGE ◒ HIGH ● VERY HIGH	
INTERSECTION MEETING CRITERIA FOR PHASE 2 ANALYSIS:					
N. GULPH/GODDARD	●	●	●	●	1
N. GULPH/GUTHRIE	●	●	●	●	1
HENDERSON/202	●	●	●	◒	2
N. GULPH/1ST	●	●	●	○	2
S. GULPH/202	●	●	●	○	4
S. GULPH/UPPER GULPH	●	●	◒	◒	5
MOORE/VF RD.	●	◒	●	○	11
GUTHRIE/DEKALB	●	◒	◒	●	12
S. GULPH/BALLIG	●	◒	◒	◒	17
202/ALLENDALE	◒	●	●	○	19
N. GULPH/N. WARNER	●	○	●	●	22
GODDARD/WILLS	◒	●	◒	○	26
CHURCH/CROOKED	◒	●	○	◒	27
ALLENDALE/1ST	◒	●	○	◒	27
S. WARNER/DEKALB	●	○	◒	●	30
S. WARNER/CONTINENTAL	●	○	◒	●	30
S. WARNER/HERRING	◒	◒	◒	●	30
N. WARNER/SWEDESFORD	◒	◒	◒	●	33

EXHIBIT 15
INTERSECTION CONDITIONS SUMMARY TABLE
(Continued)

INTERSECTION	LEVEL OF SERVICE ○ ACCEPTABLE ◒ MARGINAL ● UN-ACCEPTABLE	5 MONTH ACCIDENTS HISTORY ○ 0-4 ◒ 5-7 ● >8 OR MORE THAN 3 MILLION VEHS.	PEAK HOUR VOLUME ○ <1800 ◒ 1800-2800 ● > 2800	PROJECTED GROWTH ○ AVERAGE ◒ HIGH ● VERY HIGH	TRAFFIC PROBLEM INDEX SCORE
INTERSECTION MEETING CRITERIA FOR PHASE 2 ANALYSIS (Continued)					
WILLS/ALLENDALE	◒	●	○	○	34
MATSONFORD/MONTGO	●	○	◒	◒	38
S. GULPH/SHOEMAKER	●	○	◒	◒	38
202/KING'S CIRCLE	◒	◒	●	○	40
GODDARD/COURT BLVD.	◒	◒	●	○	40
202/TOWN CENTER	○	●	●	○	43
202/GODDARD	○	●	●	○	43
202/LONG	○	●	●	○	43
HENDERSON/FV RD.	○	●	◒	◒	44
S. GULPH/GYPSY	●	○	◒	○	46
HENDERSON/CHURCH	●	○	◒	○	46
S. GULPH/HOLSTEIN	●	○	◒	○	47
1ST/MOORE	◒	◒	◒	○	49
202/BRANDYWINE	○	●	◒	○	52
GODDARD/CONRAD	○	●	○	○	52
S. GULPH/HENDERSON	○	●	○	◒	53
S. GULPH/CROOKED	●	○	○	○	54
S. WARNER/CROTON	●	○	○	○	54

EXHIBIT 15
INTERSECTION CONDITIONS SUMMARY TABLE
(Continued)

INTERSECTION	LEVEL OF SERVICE	5 MONTH ACCIDENTS HISTORY	PEAK HOUR VOLUME	PROJECTED GROWTH	TRAFFIC PROBLEM INDEX SCORE
	○ ACCEPTABLE ◒ MARGINAL ● UN-ACCEPTABLE	○ 0 - 4 ◒ 5 - 7 ● >8 OR MORE THAN 3 MILLION VEHS.	○ < 1800 ◒ 1800 - 2800 ● > 2800	○ AVERAGE ◒ HIGH ● VERY HIGH	
INTERSECTION NOT MEETING CRITERIA FOR PHASE 2 ANALYSIS:					
ALLENDALE/CROSSFIELD	◒	○	◒	◒	62
S. GULPH/ORCHARD	◒	○	◒	○	67
S. GULPH/SWEDELAND	◒	○	○	◒	68
S. GULPH/BROOKS	◒	○	○	○	72
KEEBLER/VF RD.	◒	○	○	○	72
S. GULPH/W. CHURCH	◒	○	○	○	72
S. GULPH/CROTON	◒	○	○	○	72
K OF P/CROTON	◒	○	○	○	72
ALLENDALE/KEEBLER	○	○	◒	◒	77
202/DANN BRIDGE	○	○	◒	○	79
VF RD./N. GULPH	○	○	◒	○	79
VF RD./BEIDLER	○	○	○	◒	80
VF RD./ALLENDALE	○	○	○	◒	80
ALLENDALE/ELLIOT	○	○	○	◒	80
BEIDLER/HENDERSON	○	○	○	◒	80
GULPH/MATSONFORD	○	○	○	◒	80
RIVER/SWEDELAND	○	○	○	◒	80
FLINT HILL/SWEDELAND	○	○	○	◒	80
SWEDELAND/HOLSTEIN	○	○	○	◒	80
CHURCH/FLINT HILL	○	○	○	○	81
CROTON/BROOKS	○	○	○	○	81



LEGEND

● LOCATION OF COUNT

5.2 AVERAGE ANNUAL DAILY TRAFFIC (IN THOUSANDS)

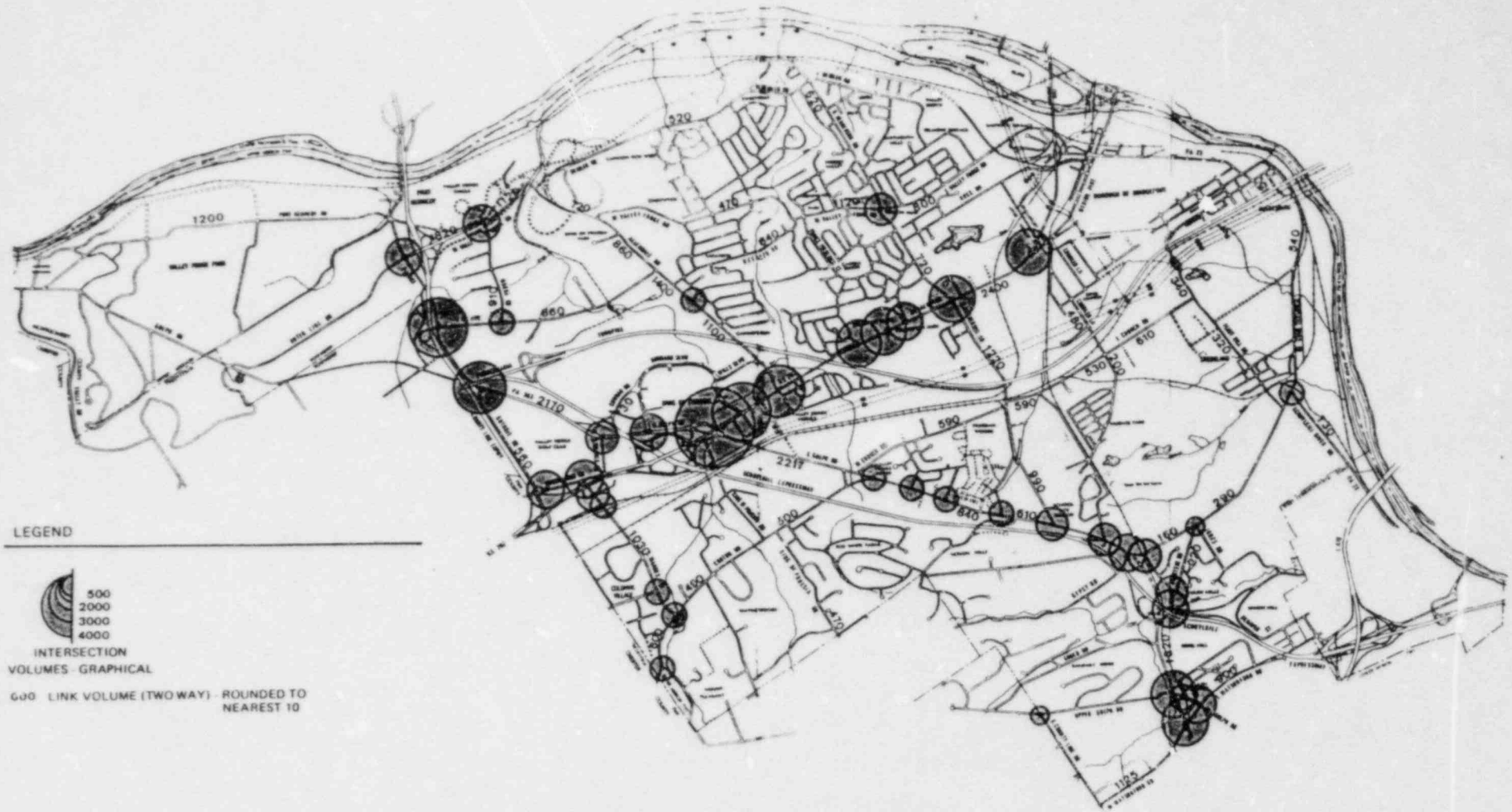
PREPARED BY
SIMPSON & CURTIN
DIVISION OF BOOZ-ALLEN & HAMILTON INC

PREPARED FOR
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

EXISTING AVERAGE DAILY TRAFFIC VOLUMES

0 2000 4000 FEET
0 1/2 1 MILE

EXHIBIT 2



PREPARED BY
SIMPSON & CURTIN
DIVISION OF BOOZ · ALLEN & HAMILTON INC.

PREPARED FOR
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

MORNING PEAK HOUR TRAFFIC VOLUMES

0 2000 4000 FEET
0 1 MILE

EXHIBIT
3

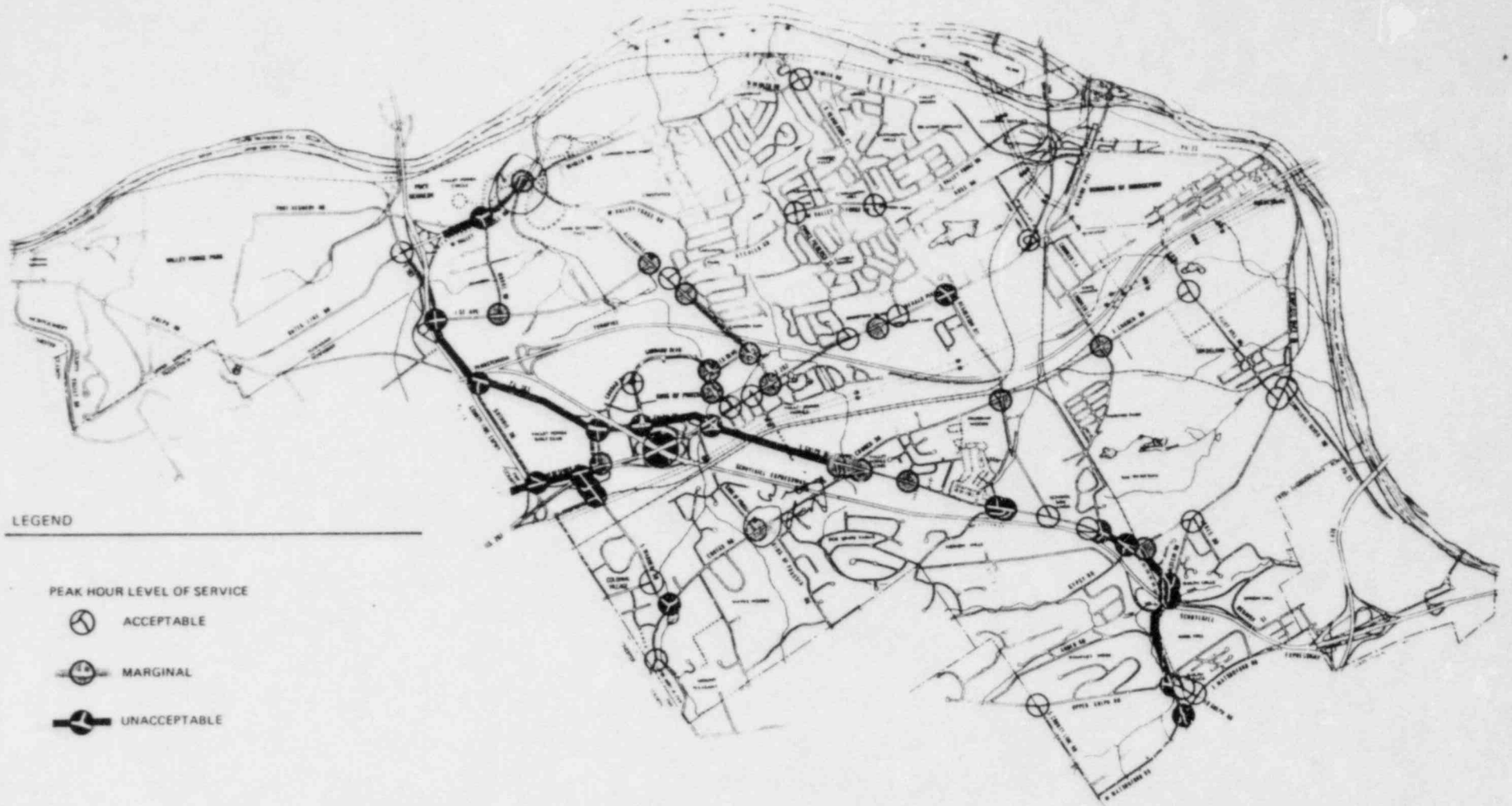
PREPARED BY
SIMPSON & CURTIN
DIVISION OF BOOZ ALLEN & HAMILTON INC.

PREPARED FOR
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

AFTERNOON PEAK HOUR TRAFFIC VOLUMES

0 2000 4000 FEET
0 1/2 1/2 1 MILE

EXHIBIT
4



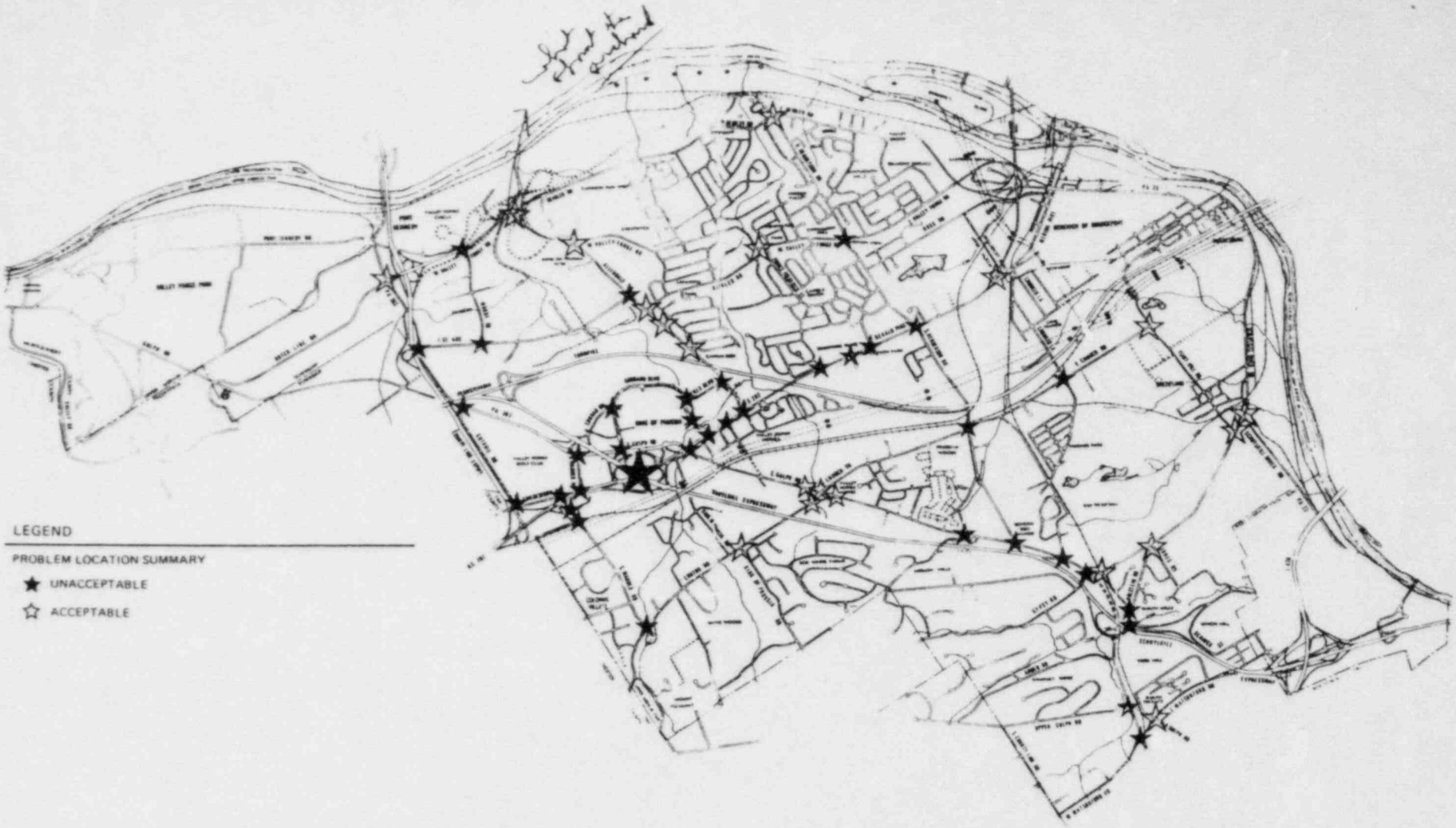
PREPARED BY
SIMPSON & CURTIN
DIVISION OF BOOZ ALLEN & HAMILTON INC.

PREPARED FOR
UPPER MERION TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

LEVEL OF SERVICE SUMMARY

0 2000 4000 FEET
0 1 MILE

EXHIBIT
7



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MONTGOMERY COUNTY, PENNSYLVANIA

INTERSECTION TRAFFIC CONDITIONS

0 2000 4000 FEET
0 1 MILE

EXHIBIT
16

" LEA EXHIBIT "

Draft General Management Plan, Valley Forge National Park, Nov. 1981

Table 1. Park Visitor Day Use
(Typical Peak Summer Month)

Activity	Total Contacts 1978	% of Total 1978	% Change From 1978 1979	% Change From 1978 1980	Projected Annual Visits (1981)
Observation Tower Use	24,620	5.2	- 6	- 37	107,649
Model Airplane Flying	3,150	0.6	-58	- 17	16,820
Horseback Riding	730	0.1	-23	+ 63	6,728
Bicycling	5,685	1.2	-33	- 15	33,640
Dog Walking	1,653	0.3	+ 6	+ 62	16,820
Jogging	3,241	0.6	+70	+ 78	40,368
Fishing	763	0.1	+42	+ 92	10,092
Boating	813	0.1	+33	+ 80	10,092
Bus Riding	11,205	2.5	+73	+195	225,391
Kite Flying	140	0	+58	+241	3,364
Picnicking	12,375	2.7	+ 2	+129	195,115
Visitor Center Use	25,318	5.3	+48	+ 41	242,211
Betzwood Area Use	24,060	5.1	+21	+ 38	228,755
Pleasure Driving	243,360	51.5	-18	- 6	1,547,460
Visits to Historic Facilities	115,869	24.5	NA*	NA*	824,191
Total	472,982	100%			3,508,696

*Not applicable because certain historic sites have been removed from the tour route.

Visitation figures included in this section are based on several sources, the most comprehensive of which is the park's monthly public use report. Another source includes a visitor use survey that was conducted during the summer of 1979 to provide data for this plan and to analyze a park bus transit system. Staff and planning team observations were also tapped for general visitation characteristics and trends.

The total volume of park-related use has greatly increased since 1975. The commonwealth of Pennsylvania estimated 1.7 million visits in 1975; there were 3.1 million visits in 1979 and 3.3 million in 1980. Traffic counts for 1979 totaled over 11 million.

Of all traffic through the park, 25 percent is estimated to be park visitors; of this percentage, about 25 percent has historical interest. The heaviest visitation occurs from April through December, with peak concentrations on holidays and weekends during special attractions such as fall color and dogwood flowering. In 1978 during the peak period, there were approximately 317,000 visitors per month compared with 93,000 visitors per month during the off-season (January-March). The 317,000 visitors per month is 11 percent of the theoretical capacity of the park's

vehicle parking spaces. Since the state [illegible] program, th bicentennial, and the park's recent national [illegible] oriente visitation has increased dramatically. In 1973 [illegible] ts wer tallied at both Washington's headquarters and the visitor [illegible]

Whereas historically oriented visitation is spread evenly [illegible]out th week, nearly 40 percent of all recreational use occurs [illegible] eekend between 10:30 a.m. and 3:30 p.m. on Saturdays and [illegible] 3:30 p.m on Sundays. Almost 70 percent of all Sunday visits take place during these peak hours. On a typical peak Sunday, 90 percent of visitor use private automobiles; the remainder use other forms of [illegible]portation such as tour bus, horse, bicycle, or foot.

In 1979 the 25 percent of Sunday visitors with historical interest (2,32 visitors) required 580 vehicle parking spaces at Washington' headquarters, the visitor center, Varnum's quarters, and Washingtor Memorial Chapel. The remaining 75 percent of Sunday visitors with recreational interest (6,967 visitors) required 1,742 autos to be parked a outlying areas as well as major historic sites.

At present the 1,333 parking spaces serving historic sites would hold 16,00 cars with a 30-minute turnover during peak hours. The [illegible]241 space serving recreation areas will hold 7,400 cars with a turnover every 4 minutes. Based on the visitor use survey, the typical length of stay or the weekend of the historically oriented visitor is [illegible] sites each a three sites; the visitor interested in weekend recreation stays about 3 minutes at one site. Total daily park capacity at the current turnover rate is theoretically about 93,600 historical and recreational use visitors

Assumptions can be made about the various use patterns of visitors based on their proximity to the park and how frequently they visit. Nationa visitors (those living more than 50 miles away and requiring lodging somewhere in the vicinity) will visit infrequently, maybe only once or twice during their lifetime. The full range of visitor information and orientation, plus all interpretive facilities, picnic areas, and trails, could be used in association with seeing the historic resources. The visitor us survey indicated that 27 percent of the respondents were first-timers and 33 percent were of national or regional origin. (The heavies percentage of national visitation occurs during summer months.)

Regional visitors live from 25 to 50 miles away, which means they migh seek accommodations in the area. They would likely visit the park several times a year though not as often as local users. Special event would particularly attract regional visitors. They might bring friends or relatives from out of the region on subsequent visits. After their initia orientation, regional visitors would likely concentrate on interpretive programs and historic resources of interest to them. Their use would b spread more evenly throughout the year than national visitors, and they would probably engage in some recreational pursuits during their visit

Local users live within a 25-mile radius of the park, the majority in th suburban Philadelphia area. These visitors would use the park for historical purposes about like their regional counterparts; however, they would visit the park more frequently for recreational purposes. T

continually reach this audience, interpretive programs would need to change with time or be more specialized, e.g., seminars, lectures, themes.

General Development

Existing Visitor Use Facilities. Table 2 inventories existing visitor use facilities within the park. Table 4, which is included at the end of the "The Plan, General Development" section, shows a comparison of existing and proposed visitor use facilities (parking spaces, picnic tables, and restrooms).

Access/Circulation. Various geographic barriers have forced the regional transportation routes through Valley Forge. The Pennsylvania Turnpike (I-76) and County Line Expressway (PA 363) are man-made barriers, all of which have limited access to the park. Over the years increased traffic from housing developments has reinforced their utilitarian importance.

The primary mode of access to Valley Forge is by private vehicle. Local residents sometimes ride horseback, walk, or bicycle into the park. Direct access by public transportation is limited.

Three state routes--23, 252, and 363--lie within the boundaries of the park. PA 23, south of the Schuylkill River, carries commercial and commuter traffic. PA 252, on the western edge of the park, carries a heavy volume of truck traffic between PA 23 and US 202. PA 363 serves as an extension of PA 23 and as access to the park from the east.

Traffic at the Valley Creek Bridge exceeds 14,000 vehicles a day, with 9,000 vehicles on PA 23, 4,000 on Gulph Road, and 1,200 on PA 252. Peak hour volumes on 23 are at 7:00-8:00 a.m. and 4:00-5:00 p.m. with approximately 1,000 vehicles per hour in both directions.

At present PA 23 and PA 252 are important to both external through-traffic and to park visitation. Generally, park visitors tend to drive at or below the speed limit, whereas commercial and commuter traffic often forces traffic flow to exceed posted speed limits. The intersection of these roads, which is at the bottom of a steep grade, is the main entrance to the park from the west. This creates considerable conflict particularly when visitors are focusing on park features rather than traffic.

Much of the commercial and commuter traffic on PA 23 is between Phoenixville and the western fringes of Philadelphia, including King of Prussia. To alleviate traffic congestion on secondary roads in this area, a four-lane limited access expressway known as the Pottstown bypass is now under contract. A spur from this route to Phoenixville will be constructed later. The Park Service also supports construction of access ramps at Pawling Road. These facilities combined should significantly reduce nonpark-related through-traffic on PA 23.

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park, carries a heavy volume of truck traffic and connects with PA 23 to the north and US 202 to the south. PA 363 serves as an extension of PA 23 and as a park access road from the east.

Traffic counts taken at the Valley Creek Bridge indicate a volume exceeding 14,000 vehicles daily. The distribution of east-west traffic through the park is as follows: 9,000 vehicles on PA 23, 4,000 on Gulph Road, and 1,200 on PA 252. Peak hour volumes on 23 are at 7:00-8:00 a.m. and 4:00-5:00 p.m. with approximately 1,000 vehicles per hour in both directions.

At present PA 23 and PA 252 are important to both external and through-traffic movement and to park visitation. The commuter or commercial vehicle traveling east or west on PA 23 has no reasonable alternative but to pass through the park. Thus, the visitor frequently finds vehicles crowding behind him, encouraging him to proceed faster, and lessening his opportunity to enjoy the park. The park visitor should observe Valley Forge at a slow, unheeded pace. In contrast, commercial and commuter vehicles view the park as the shortest route to their destinations and are in turn frustrated by the slow-moving park visitor. Generally, the park visitor tends to drive at the speed limit or less, but the pressure of the commuter traffic sometimes forces traffic flow to exceed posted speed limits. All travelers must remain alert to avoid potential accidents.

One may enter Valley Forge National Historical Park at Washington's headquarters at the western end, at the visitor center at the eastern end, or indirectly from the south on PA 252, Yellow Springs Road, or Gulph Road. The park is crisscrossed by a network of roads that ultimately connect to major transportation arteries. The variety of park entrances and the abundance of internally penetrating roads make it relatively easy for external traffic to cut through the park from any direction, using minor roads as shortcuts to the arteries.

The intersection of PA 23 and PA 252 at the western entrance to the park creates considerable conflict between commuter traffic east and west on PA 23 and heavy truck traffic traveling north and south on PA 252. To compound this problem, the intersection lies at the bottom of a steep grade and is also a visitor entrance/ intersection in traveling to Washington's headquarters, a heavily visited attraction in the park.

Immediately to the southeast of the park the Schuylkill Expressway and the Pennsylvania Turnpike converge. Traffic from this location is routed up PA 363 past the Upper Merion industrial/commercial development to the eastern entrance of the park. At this major intersection PA 363 joins PA 23, and Outer Line Defense Drive joins Valley Forge Road. Commuters on PA 363 and Valley Forge Road

usually continue north to PA 23. The visitor, however, must make a dangerous left turn into the park across the path of heavy commuter traffic.

Another transportation facility in Valley Forge is the one-lane Betzwood Bridge across the Schuylkill River. This dilapidated but picturesque bridge handles one-way traffic from the Betzwood picnic and boat launch area. The Knox Covered Bridge, which crosses Valley Creek, is also one lane but serves two-way traffic. The bridge, a historic structure, is the property of the Pennsylvania Department of Transportation and is in some danger of destruction from flooding of Valley Creek. Two other bridges span Valley Creek: One carries PA 23 traffic near Washington's headquarters and appears adequate; the other serves very limited utilitarian traffic between Lafayette's quarters and Yellow Springs Road.

Two railroad lines pass through the park. The Reading Railroad line follows the south side of the Schuylkill River, and trains stop at the Valley Forge Park train station. The station has recently been renovated, and the parking lot has been improved. A former station located near Washington's headquarters is no longer a scheduled stop along the Reading route.

In 1976, SEPTA initiated increased train service to the Valley Forge station from central city Philadelphia for a period of three months. The state park also initiated fringe parking at the Valley Forge Service Plaza of the Pennsylvania Turnpike System, with shuttle bus service into the park. Although this has not been repeated, trains stop at the Valley Forge Park train station every day.

Another railroad, the Penn Central, is located immediately north of the park and serves industrial areas.

Because of the large area covered by the park and the nature and placement of historical exhibits, it is essential that vehicles be used in touring the park. The circulation of vehicles, ease of the visitor to guide himself, safety of the route, and interpretation of the park are all critical factors to internal traffic flow. Many exhibits or points of interest are in full view from the road; consequently, distractions are common. Many of the two-way roads are narrow, steep, and curved. There are times when decisions must be made as to which route to take or which attraction to visit. Many routes are deceiving and disorienting, and the visitor is frequently confused by the abundance of alternate paths and may even miss a portion of the park unintentionally. Routes such as 23 and 252 are extremely hazardous to cross because of heavy traffic. Numerous internal roads are frequently used as shortcuts to arrive at either end of the park. Some routes tend to destroy the interpretive and aesthetic value of park sites. Traffic along Gulph and Baptist roads crosses through the Grand Parade grounds;

CERTIFICATE OF SERVICE

I hereby certify that I have served Limerick Ecology Action's testimony on admitted off-site emergency planning contentions and request for subpoenas for witnesses to all parties on the service list below this 2nd. day of November, 1984 by deposit in the United States Mail, postage prepaid, expect for those parties marked (*) who were served by hand on Nov. 2, 1984.

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November 2, 1984

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